



NCControl

Export NC file



The contents of this manual are relative to GO2cam version:

V6.09

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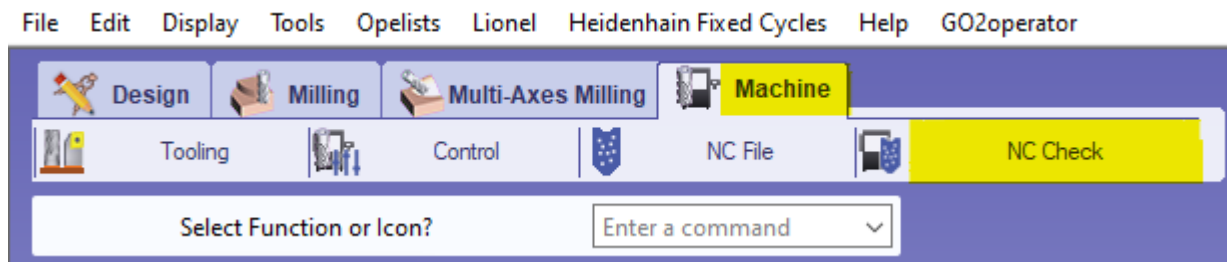
Warning to the user: all the forms included in this document are given as examples only. GO2cam International cannot be responsible for any consequences of their use.

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1 Introduction

The xml file exportNC is a file that contains the informations of MTE machine Kinematics plus Origins List and Tool Offsets. The aim of this file is to give the necessary information to NC2check to allow the analyze and treatment of the NC file send according to it.

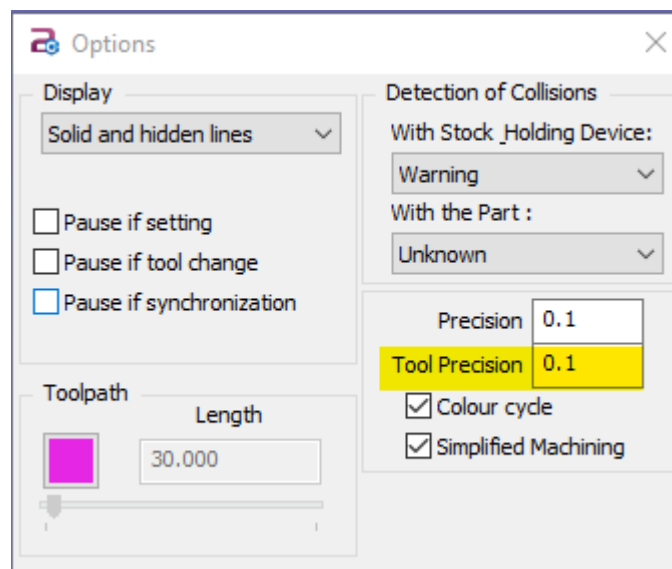


2 XML file description

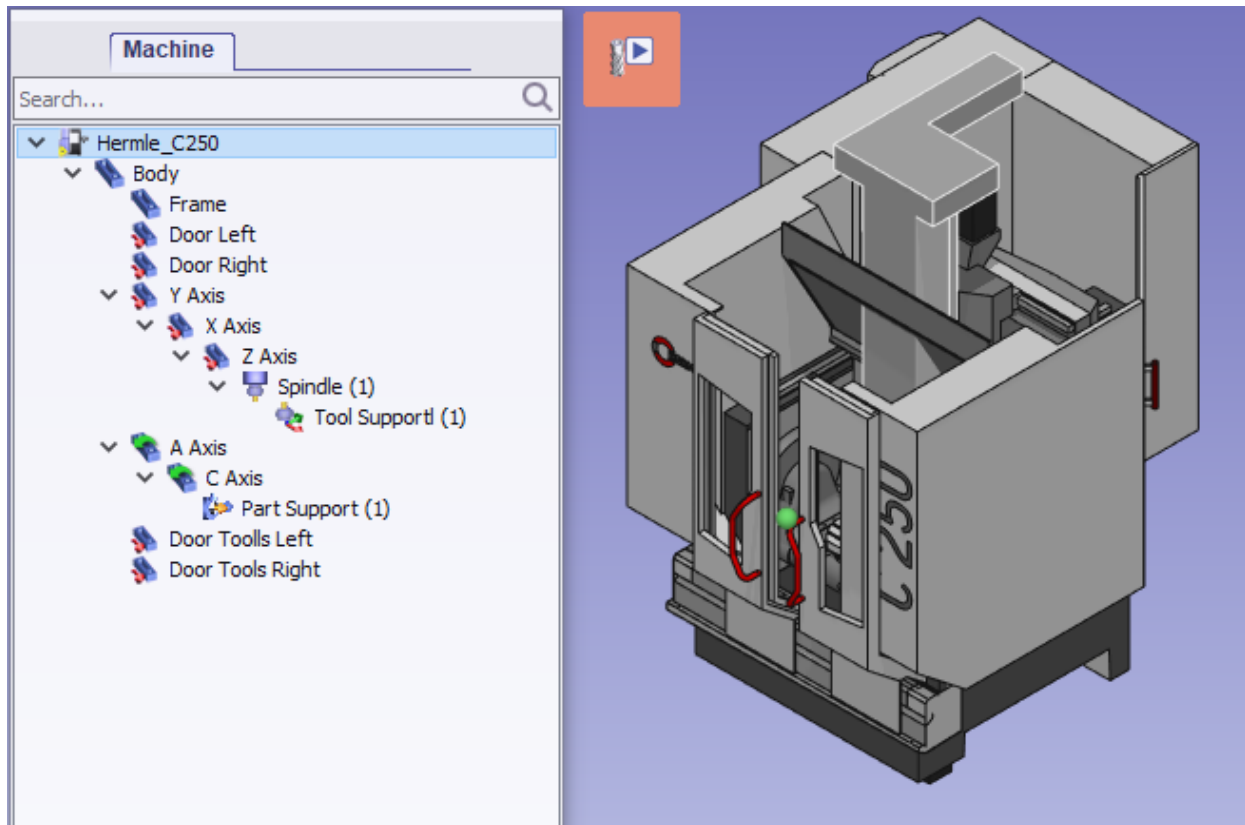
2.1 General - Tool Accuracy

Here will be output the toolpath accuracy that is the same value as the “Tool Precision” used in our MTE simulation.

```
<General ToolpathAccuracy="0.1"/>
```



2.2 Machine



```
<Machine Label="Hermle_C250" Index="1" Type="Milling">
```

Label = Name of the machine like defined in GO2cam MTE.

Index = Internal machine number in GO2cam

Type = Type of kinematics

- Undefined
- Lathe
- Milling
- Swiss Lathe

2.2.1 Component

The components defines every element of the kinematics structure. Every component is a machine element. This can be a fix component, a movable component but not programmable like doors, linear axis programmable, rotary axis, accessories, etc...

In our sample, we are dealing with a 5 axis Milling machine with CA kinematics

```
<Component Label="Body" Type="FixedComponent" Index="26">
  <Component Label="Frame" Type="FixedComponent" Index="27"/>
</Component>
<Component Label="Door Left" Type="LinearAxis" Index="28">
</Component>
<Component Label="Door Right" Type="LinearAxis" Index="29">
</Component>
<Component Label="Y Axis" Type="LinearAxis" Index="30">
  <Component Label="X Axis" Type="LinearAxis" Index="31">
    <Component Label="Z Axis" Type="LinearAxis" Index="32">
      <Component Label="Spindle(1)" Type="Spindle" Index="33">
        <Component Label="Tool Support (1)" Type="ToolSupport" Index="34">
</Component>
      </Component>
    </Component>
  </Component>
</Component>
<Component Label="A Axis" Type="RotaryAxis" Index="35">
  <Component Label="C Axis" Type="RotaryAxis" Index="36">
    <Component Label="Part Support (1)" Type="StockSupport" Index="37">
</Component>
  </Component>
</Component>
<Component Label="Door Tools Left" Type="LinearAxis" Index="38">
</Component>
<Component Label="Door Tools Right" Type="LinearAxis" Index="39">
</Component>
</Component>
```

Label = Name of the element

Index = Internal element number in G02cam

Type = Type of element

- | | |
|---|--|
| <ul style="list-style-type: none">• FixedComponent• LinearAxis• RotaryAxis• Turret• Spindle• PartSupport• ToolSupport• MillingHolder• TurningHolder | <ul style="list-style-type: none">• SymbolHolder• Store• Rack• AccessorySupport• WorkAssemblySupport• ChuckSupport• StockSupport• HeadSupport• AnchorSupport |
|---|--|

2.3 Parameters

2.3.1 Matrix

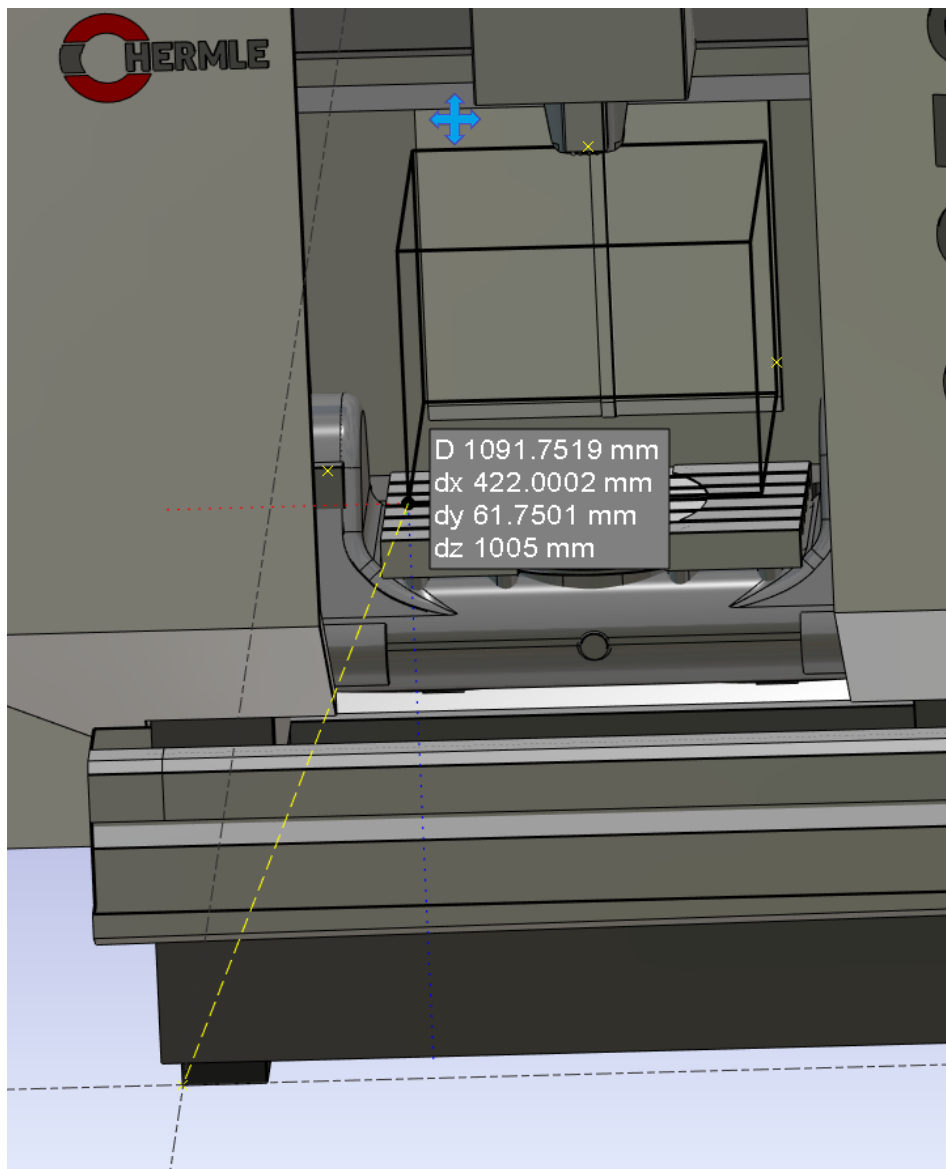
```
<Matrix>  
  <VectorX X="1" Y="0" Z="0"/>  
  <VectorY X="0" Y="1" Z="0"/>  
  <VectorZ X="0" Y="0" Z="1"/>  
  <Origin X="422.0002" Y="61.75011" Z="1005"/>  
</Matrix>
```

VectorX = Definition of X direction

VectorY = Y direction

VectorZ = Z direction

Origin = Machine Origin position from GO2cam zero (see picture)



2.3.2 Attrib

```
<Attrib SubType="Axis" Ident="1" Programmable="YES" Limitation="NO"
      MiniValue="-300" MaxiValue="300"/>
```

Subtype = Name of the element

- Axis
- Door
- Trapdoor
- Changer
- Collector
- Tailstock
- Steady
- Robot
- Chuck
- Jaw
- SettingAxis

Ident = ID number

Programmable = axis that moves the element or just position (like a door)

- YES
- NO

Limitation = on RotaryAxis only, Axis limited or unlimited.

- YES
- NO

MiniValue = Minimal position

MaxiValue = Maximal position

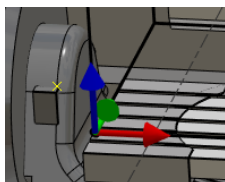
2.3.3 Vector

```
<Vector X="1" Y="0" Z="0"/>
```

Defines the axis direction

(X = 1 for X axis with plus direction on the right side for example)

Body



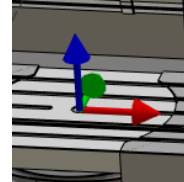
```
<VectorX X="1" Y="0" Z="0"/>
<VectorY X="0" Y="1" Z="0"/>
<VectorZ X="0" Y="0" Z="1"/>
```

ToolSupport



```
<VectorX X="1" Y="0" Z="0"/>
<VectorY X="0" Y="-1" Z="0"/>
<VectorZ X="0" Y="0" Z="1"/>
```

PartSupport



```
<VectorX X="1" Y="0" Z="0"/>
<VectorY X="0" Y="1" Z="0"/>
<VectorZ X="0" Y="0" Z="1"/>
```

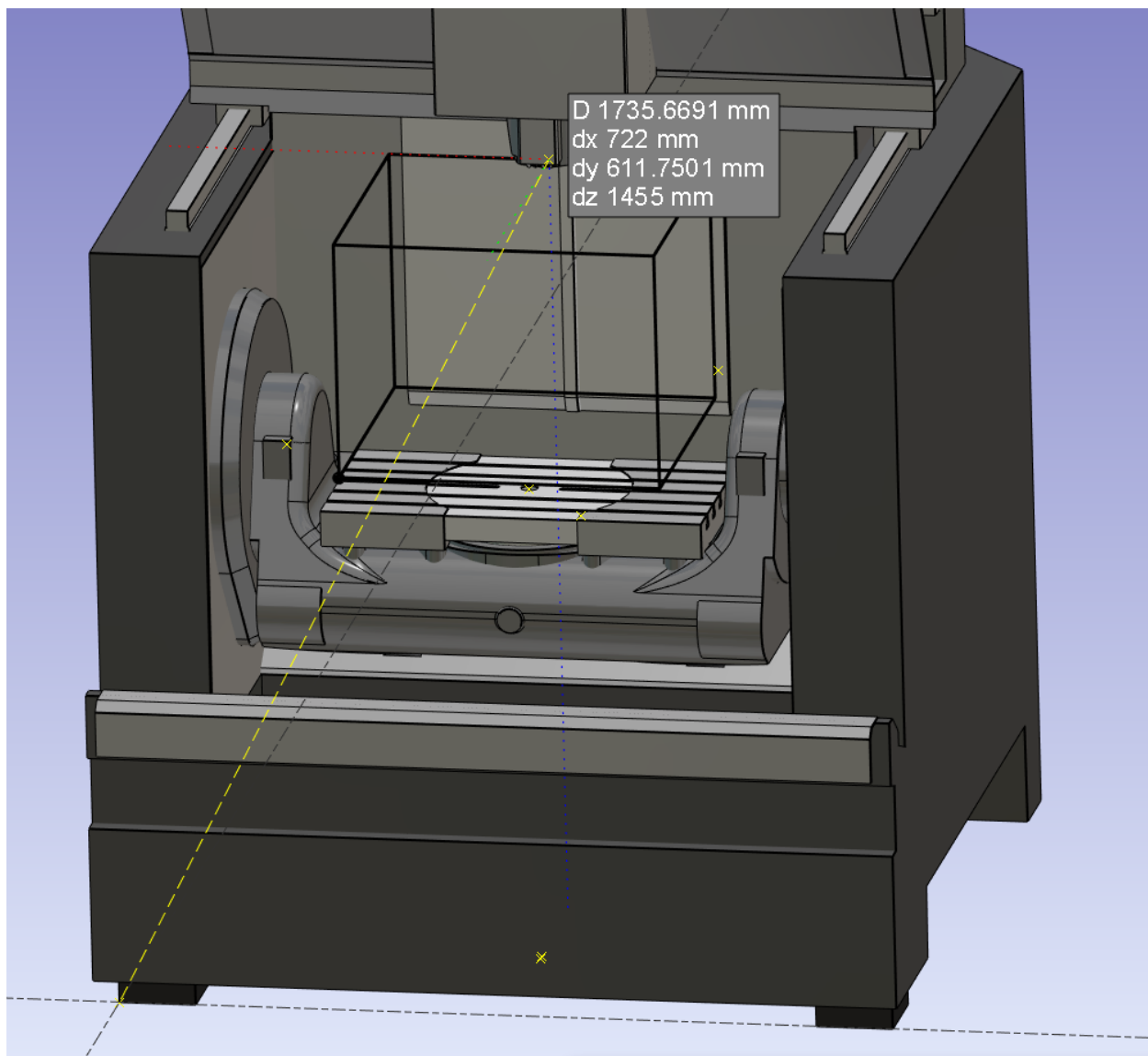
2.3.4 Origin

```
<Origin X="1049.5" Y="865.7939341" Z="1989.6630327"/>
```

The position of origin is not useful on Axis but useful on part support and tool support.
This position is relativ to GO2cam origin !

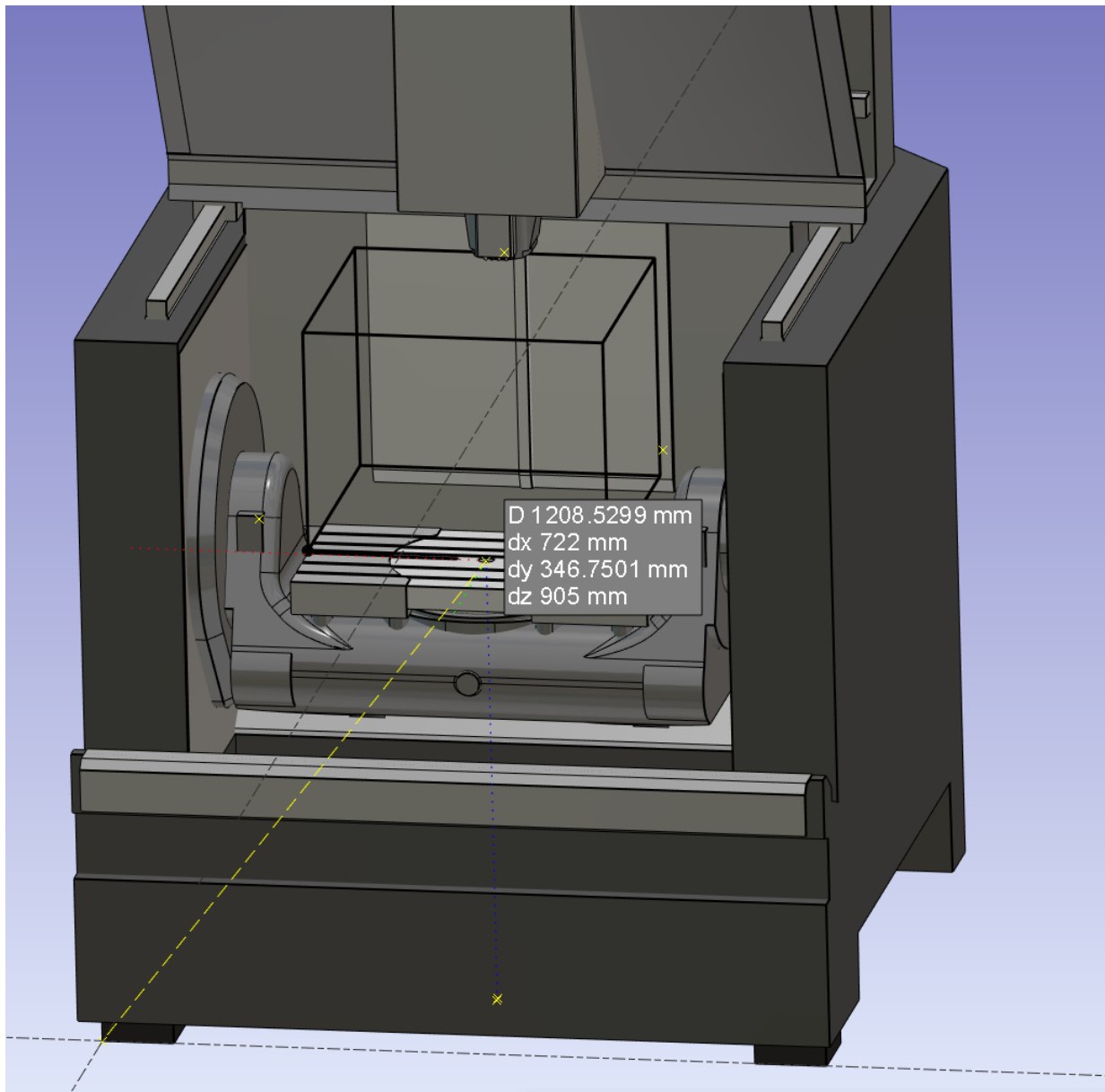
Tool Support :

```
<Component Label="Tool Support (1)" Type="ToolSupport" Index="34">  
  <Parameters>  
    <Attrib Ident="1"/>  
    <Matrix>  
      <VectorX X="1" Y="0" Z="0"/>  
      <VectorY X="0" Y="-1" Z="0"/>  
      <VectorZ X="0" Y="0" Z="-1"/>  
      <Origin X="722" Y="611.75011" Z="1455"/>  
    </Matrix>  
  </Parameters>  
</Component>
```



Part Support :

```
<Component Label="Part Support (1)" Type="StockSupport" Index="37">  
  <Parameters>  
    <Attrib Ident="1"/>  
    <Matrix>  
      <VectorX X="1" Y="0" Z="0"/>  
      <VectorY X="0" Y="1" Z="0"/>  
      <VectorZ X="0" Y="0" Z="1"/>  
      <Origin X="722" Y="346.75011" Z="905"/>  
    </Matrix>  
  </Parameters>  
</Component>
```



2.4 List of tools

```
<ToolListMachine Number="5">
  <Position Turret="1" Number="1" Pocket="0">
    <Tool Name="TORIQUE_D12R2.F15" Type="TOOL_MILL_CORNER_RADIUS" IdMulti="0">
      <ToolPilotPointList Number="2">
        <ToolPilotPoint LengthCompensation="1" DiameterCompensation="1"
PartToolpath="NO" Radius="6">
          <Vector X="-0" Y="0" Z="140"/>
        </ToolPilotPoint>
        <ToolPilotPoint LengthCompensation="1" DiameterCompensation="0"
PartToolpath="YES" Radius="6">
          <Vector X="-0" Y="0" Z="140"/>
        </ToolPilotPoint>
      </ToolPilotPointList>
    </Tool>
  </Position>
  ...
  ...
  ...
</ToolListMachine>
```

2.4.1 ToolListMachine

```
<ToolListMachine Number="5">
```

Number = How many tools used on the machine (in this example, 5 tools)

2.4.2 Position

```
<Position Turret="1" Number="1" Pocket="0">
```

Turret = Turret number on the machine. In milling, always one but useful in turning on multiturret machines.

Number = Tool number in G02cam.

Pocket = Pocket number on the machine.

2.4.3 Tool

```
<Tool Name="TORIQUE_D12R2.F15" Type="TOOL_MILL_CORNER_RADIUS" IdMulti="0">
```

Name = Toolname. This is the physical name of the file used in G02cam.

Type = Tool family.

IdMulti = For multi pilot points on tools

2.4.4 ToolPilotPointList

```
<ToolPilotPointList Number="2">
```

Number = Number of pilot point.

2.4.5 ToolPilotPoint

```
<ToolPilotPoint LengthCompensation="1" DiameterCompensation="1"  
PartToolpath="NO" Radius="6">  
  <Vector X="-0" Y="0" Z="140"/>
```

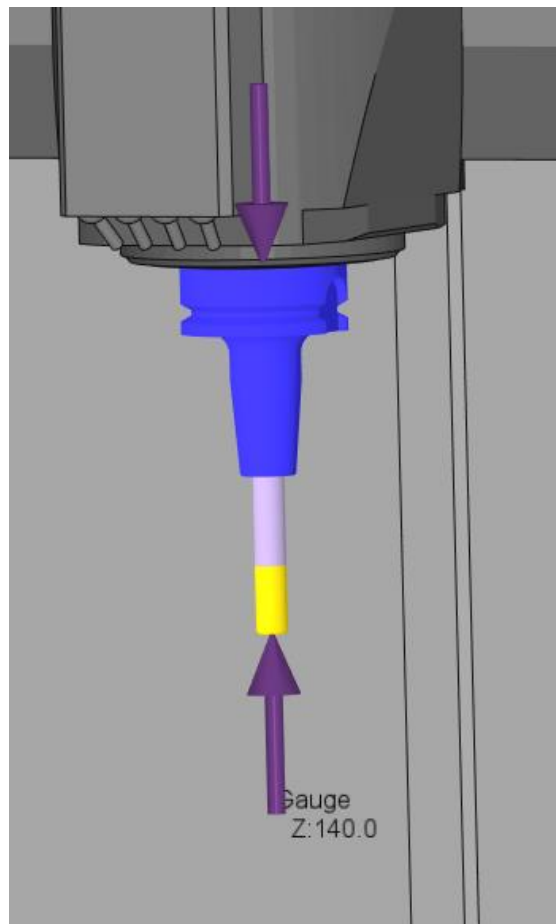
LengthCompensation = Length compensation number.

DiameterCompensation = Diameter compensation number.

PartToolpath = "YES" or "NO" part toolpath with radius compensation or not.

Radius = Radius value for compensation.

Vector = The vector gives the direction of the tool and the Z value the "Tool Gauge".



2.5 List of origins

```
<StockPosition>
  <StockSupportList Number="1">
    <StockSupport Label="Machine Setting" Ident="1" IdSupport="1">
      <Matrix>
        <VectorX X="1" Y="0" Z="0"/>
        <VectorY X="0" Y="1" Z="0"/>
        <VectorZ X="0" Y="0" Z="1"/>
        <Origin X="0" Y="0" Z="228"/>
      </Matrix>
    </StockSupport>
  </StockSupportList>
  <MachiningOriginList Number="1">
    <MachiningOrigin Label="$1 ">
      <Origin X="0" Y="0" Z="0"/>
    </MachiningOrigin>
  </MachiningOriginList>
</StockPosition>
```

2.5.1 StockSupportList

```
<StockSupportList Number="1">
```

Number = Stockposition.

2.5.2 StockSupport

```
<StockSupport Label="Machine Setting" Ident="1" IdSupport="1">
```

Label = Toolname. This is the physical name of the file used in GO2cam.

2.5.3 Matrix

```
<Matrix>
  <VectorX X="1" Y="0" Z="0"/>
  <VectorY X="0" Y="1" Z="0"/>
  <VectorZ X="0" Y="0" Z="1"/>
  <Origin X="0" Y="0" Z="228"/>
  ...
```

VectorX = Trihedron definition X.

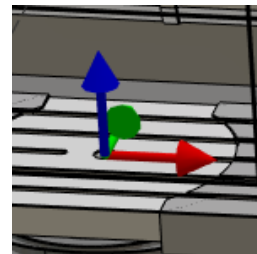
VectorY = Trihedron definition Y.

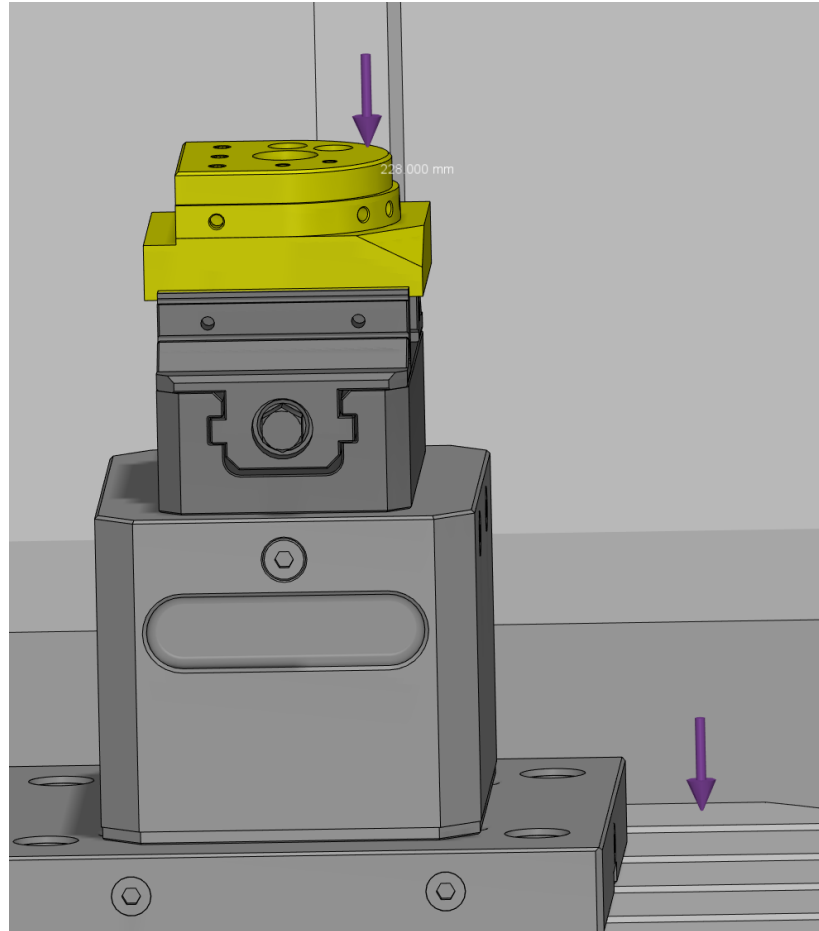
VectorZ = Trihedron definition Z.

Origin = Origin position of the stockposition relative to GO2cam origin.

Z 228 is the difference between Table origin and part origin.

This is the stocksupport according to tableposition (fixing part holder translate the part





2.5.4 MachiningOriginList

```
<MachiningOriginList Number="1">
```

Number = Number of origin

2.5.5 MachineOrigin

```
<MachiningOrigin Label="$1_">
```

Label = Name of the origin in GO2cam.

For example \$1_ will be origin 1 on Heidenhain or \$G54_ will be G54 on Fanuc.